

1.5. Raceway

To maximize the performance of the Flat Roller, it is necessary to take into account the hardness, surface roughness and accuracy of the raceway, on which the rollers directly roll, when manufacturing the product. In particular, the hardness significantly affects the service life. Therefore, it is important to take much care in selecting a material and heat treatment method.

●Hardness

We recommend surface hardness of 58 HRC (\approx 653 HV) or higher. The depth of the hardened layer is determined by the size of the Flat Roller; we recommend approximately 2 mm for general use. If the hardness of the raceway is lower or the raceway cannot be hardened, multiply the load rating by the corresponding hardness factor indicated in Fig. 3 on page J-8.

●Material

The following materials are generally used as suitable for surface hardening through induction quenching and flame quenching.

SUJ2 (JIS G 4805: high-carbon chromium bearing steel)

SK3 to 6 (JIS G 4401: carbon-tool steel)

S55C (JIS G 4051: carbon steel for machine structural use)

If the machine body is a mold, depending on the service conditions, a hardened steel plate may not be used and instead, the surface of mold itself may be hardened.

●Roughness of the surface

To achieve smooth motion, the surface should preferably be finished to 0.4 μ m or less. If slight wear is allowed in the initial stage, the surface may be finished to approximately 0.8 μ m.

●Accuracy

When high accuracy is required, securing a hardened steel plate to the machine body may cause undulation on the raceway. To avoid this, secure the Flat Roller with bolts before grinding the hardened steel plate as with when mounting the product, or tightening it to the machine body before grinding and finishing the raceway, to produce a good result.